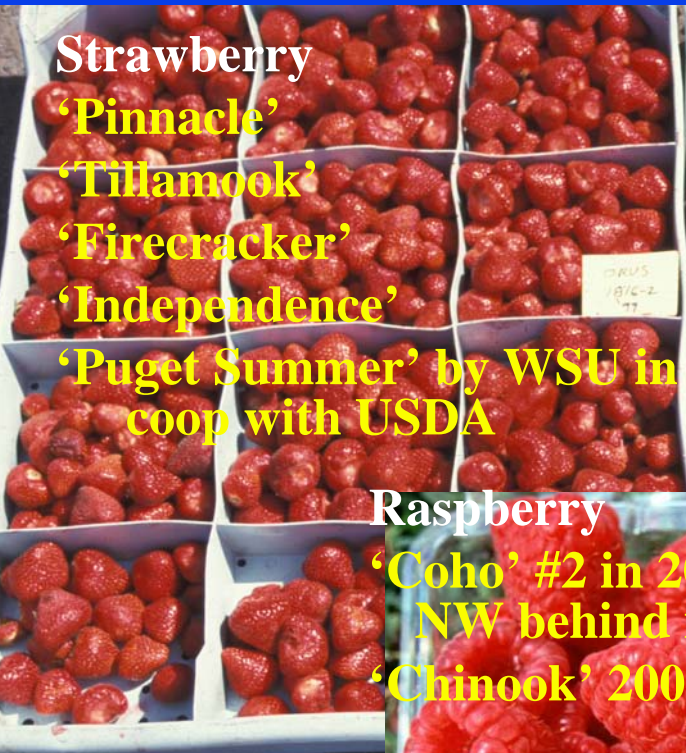


USDA-ARS Small Fruit Breeding Program



PI: Chad Finn, HCRL, Corvallis

New Cultivars Released in Past 5 Years are Having a Major Impact!



Strawberry

'Pinnacle'

'Tillamook'

'Firecracker'

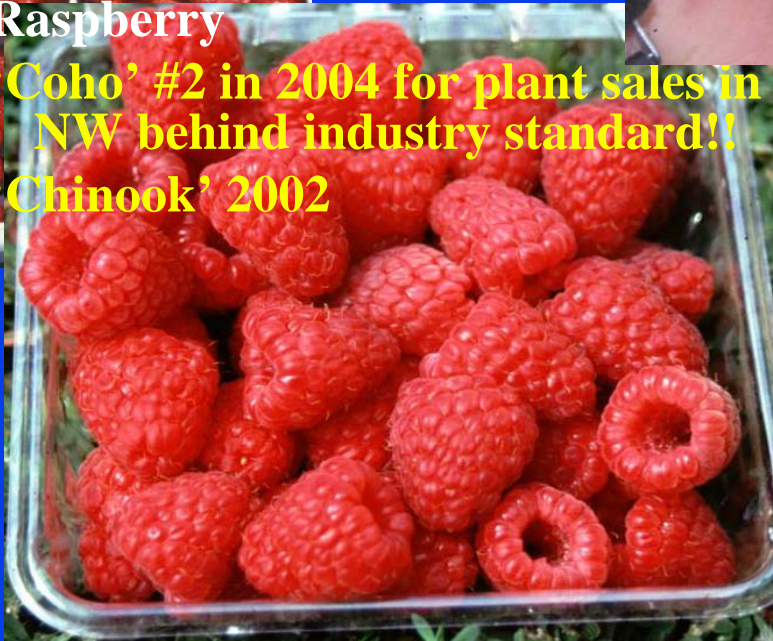
'Independence'

**'Puget Summer' by WSU in
coop with USDA**

Raspberry

**'Coho' #2 in 2004 for plant sales in
NW behind industry standard!!**

'Chinook' 2002



Blackberry

**Fresh Market, Earliest Ripening on
the Market!**

'Obsidian'

'Metolius'



Blackberry

Thornless for Processing Market

**'Black Diamond' #1 in 2004 for
plant sales!!**

'Black Pearl'

'Nightfall'

Small Fruit Horticulturist

PI: David Bryla, HCRL, Corvallis



New irrigation methods developed at the HCRU increase plant growth and improve water use efficiency in young blueberry fields; additional strategies are being developed for other berry crops grown in the region.

Plant Physiology – Nursery Crops

PI: Carolyn Scagel, HCRL, Corvallis



Defoliant



3% Urea + Defoliant



Using foliar
fertilization to
increase
transplant
performance of
bareroot
nursery stock

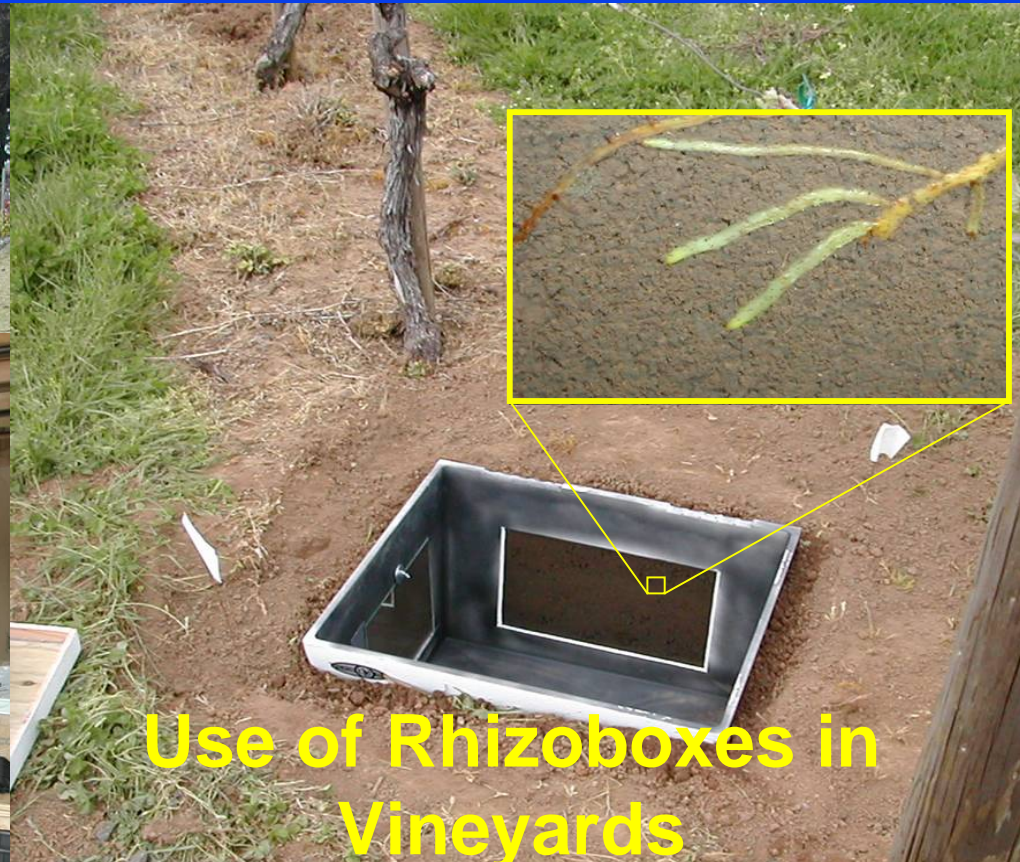
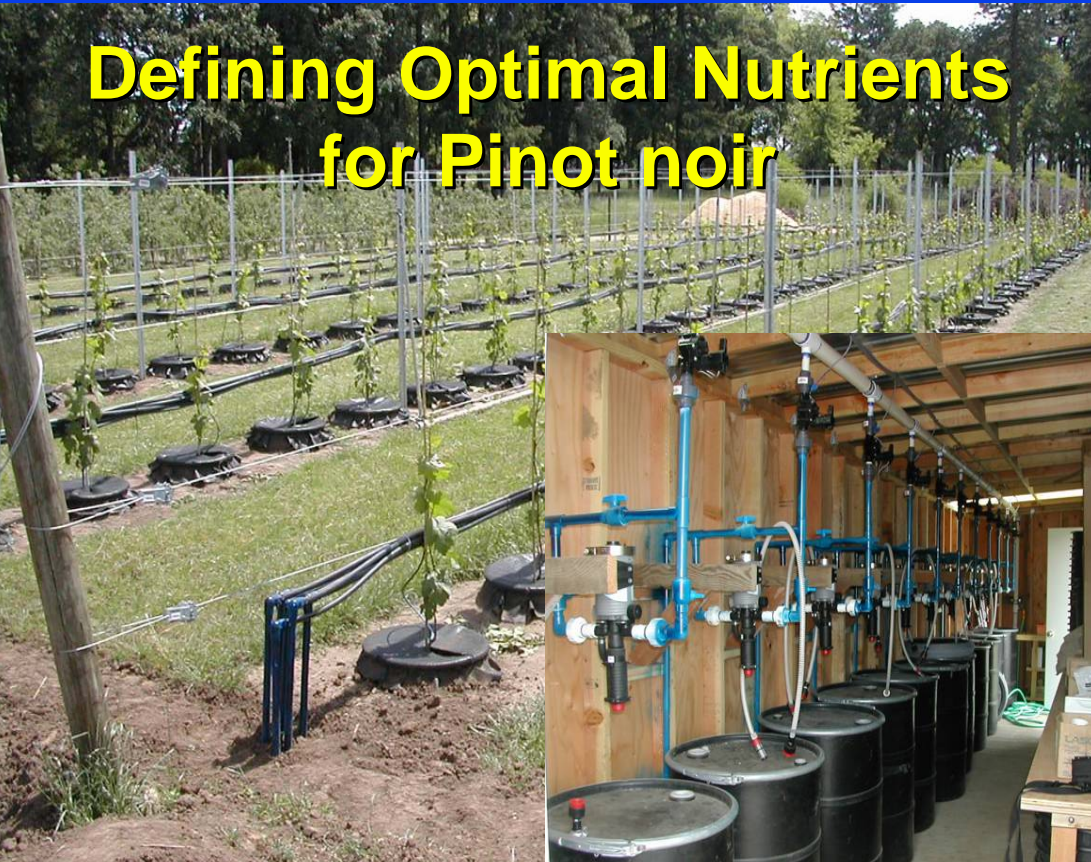
Root Physiology, Grapevines and Small Fruits

PI: Paul Schreiner, HCRL, Corvallis, OR



This research focuses is on the nutritional requirements of grapevines and the factors that control root and mycorrhiza function (growth, nutrient and water uptake, nutrient storage) in small fruit production systems.

Defining Optimal Nutrients for Pinot noir



Grape Horticultrist

PI: Julie Tarara, HCRL, Prosser, WA

Effect of Temperature on Vine Physiology



Measuring Whole-vine Photosynthesis



Grape Horticulturist

PI: Krista Shellie, HCRL, Parma, ID



Uneven Ripening



Berry Temperature

Food Technology – Factors in wine quality

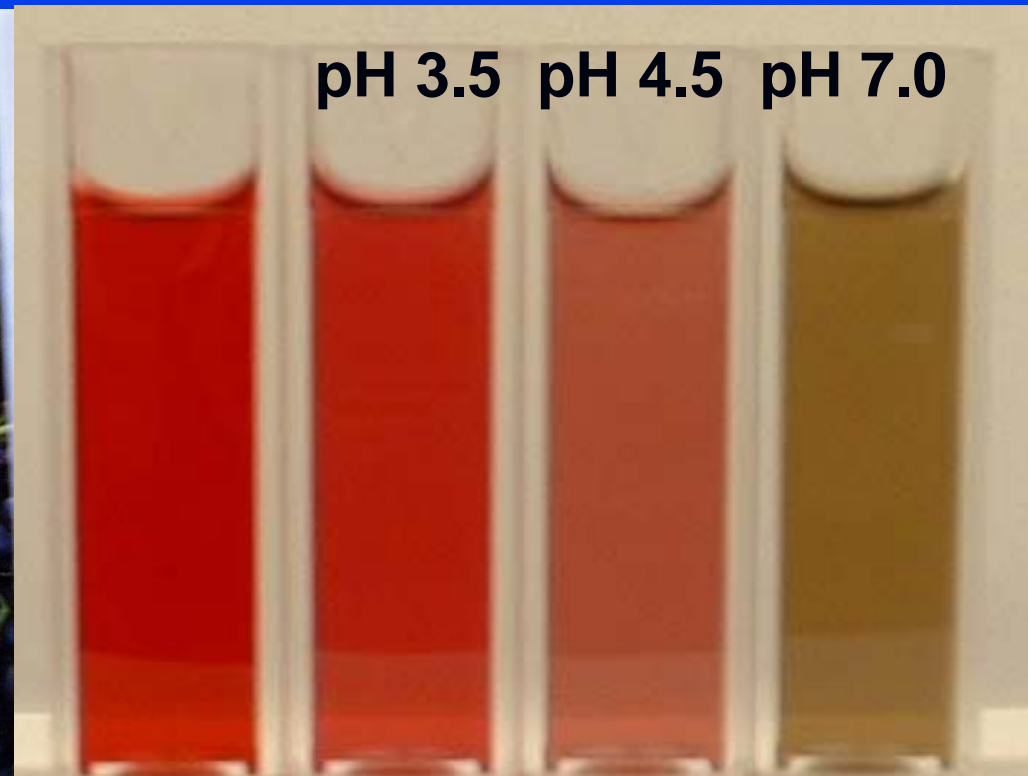


PI: Jungmin Lee, HCRL, Parma, ID

This is a new research program with the goal is to identify and apply factors that improve the color, aroma, and flavor of wine, from the starting material to the end product.



Pomace



Grape extract

Where do Idaho grapes and wines stand?



Biochemical component analysis of commercially available Idaho wines. 2 reds and 2 whites (Merlot, Cabernet Sauvignon, Chardonnay, and Riesling).

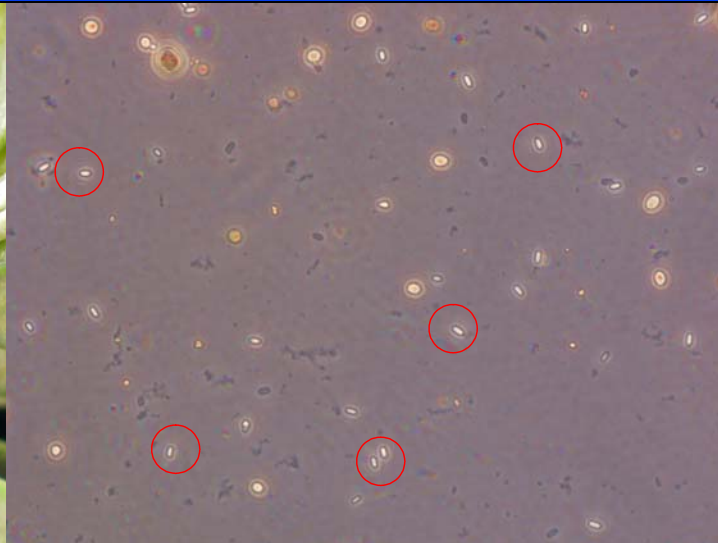
Current project 2004

Seed removal at different stages of fermentation- Merlot



Samples collected: grapes, must, seeds, finished wine

Nursery Crops Entomology, PI: Denny Bruck, HCRL, Corvallis



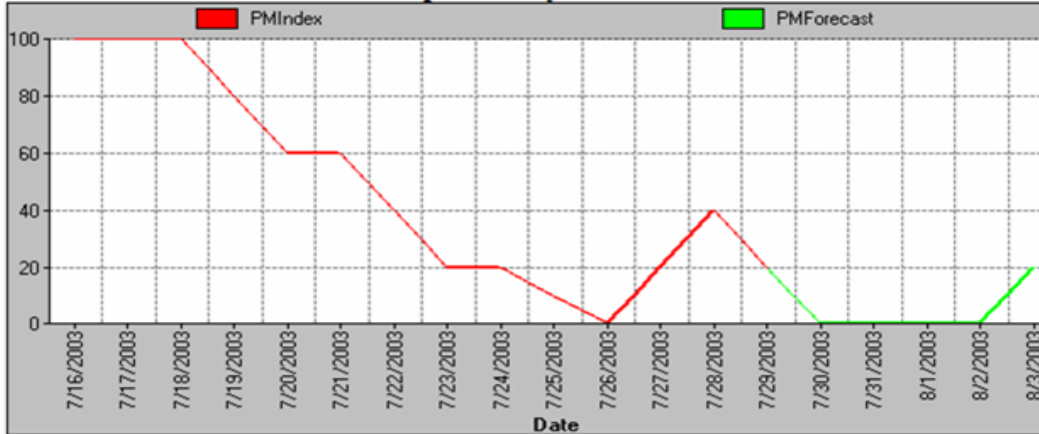
1. Adult Black Vine Weevil (BVW)
2. New Species of Microsporidian Parasite of BVW
3. BVW Larvae infected with Metarhizium
4. Metarhizium isolate that colonizes spruce roots and efficiently infects BVW larvae.

Infection Risk Model - Hop Powdery Mildew

PI: Walt Mahaffee, HCRL, Corvallis



3480 Hop Powdery Mildew Index



Spray Guidelines

FIVE DAY DISEASE WEATHER FORECAST
(HOP POWDERY MILDEW)
1756 PDT TUE, JULY 29, 2003

	WED	THU	FRI	SAT	SUN
DATE	07/30	07/31	08/01	08/02	08/03
TEMP:	102/55	94/54	86/53	89/50	84/50
RH %:	28/99	37/99	51/99	45/99	59/99
WIND SPEED MAX/MIN (KT)	10/0	10/0	12/0	10/0	10/0
WEATHER	SUNNY	CLEAR	HICLDS	HICLDS	HICLDS
HOPS PM (GT86/61T081)	8/9	8/7	6/7	0/7	4/7

Close Window

Guidelines for treatment timing based infection risk index

Mildew Index	Pressure	Spray Interval	Spray Material
60 - 100	HIGH	7 days	sulfur dust, bicarbonates, oils
		10 days	micronized sulfur,
		14 days	DMI fungicides*,
		14 days	Strobilurin fungicides
		See Label	Biologicals
40 - 50	MODERATE	10 days	sulfur dust, bicarbonates, oils
		14 days	micronized sulfur,
		16 days	DMI fungicides*,
		16 days	Strobilurin fungicides
		See Label	Biologicals
0 - 30	LOW	14 days**	sulfur dust, bicarbonates, oils
		18 days**	micronized sulfur,
		18 days**	DMI fungicides*,
		18 days**	Strobilurin fungicides
		See label	Biologicals

Forecast Accuracy

Day 1

75%

Day 2

68%

Day 3

61%

Day 4

58%

Day 5

54%

Nematology Program

PI: John Pinkerton, HCRL, Corvallis



Tomato Ringspot (ToRSV)
Infected Raspberries



Solarization setup

Cover Crop Trials



After 3 years, cover crops were
as effective as methyl bromide
in reducing ToRSV



**Raised bed
nonsolarized**



**Raised bed
solarized**

Biology and Control Soil-Borne Pathogens

PI: Robert Linderman, HCRL, Corvallis



Papay



Meadowfoam Seedmeal

Control of *Phytophthora ramorum* on Rhododendron

Geraniu



Arbuscular Mycorrhizae

Subdue Maxx



Genetics of the Sudden Oak Death Pathogen

PI: Nik Grunwald, HCRL, Corvallis

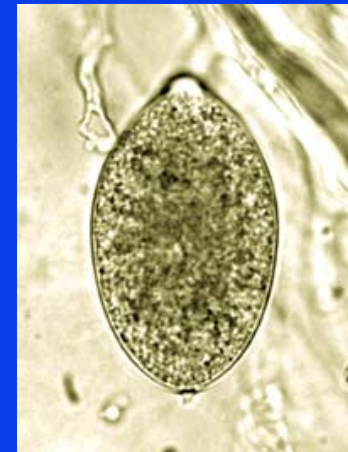


- We found 2,128 and 1,000 microsatellite loci in *P. sojae* and *P. ramorum*, respectively
- Density of SSRs (bp per Mb) in *P. sojae* is about 1.5 times that of *P. ramorum*.
- Microsatellite loci are most useful molecular markers currently used to track spread of SOD and to understand the evolution and genetics of the genus *Phytophthora*



P. ramorum on
rhododendron

Asexual
reproductive
structure of
P. ramorum



Molecular Analysis of Biological Control of Plant Disease

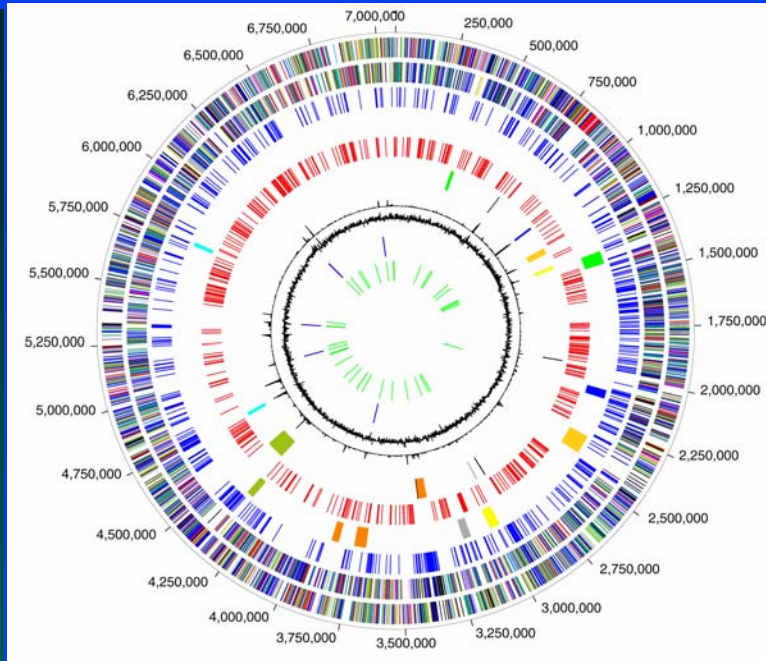
PI: Joyce Loper, HCRL, Corvallis

Pseudomonas fluorescens Pf-5
suppresses soilborne plant
pathogens



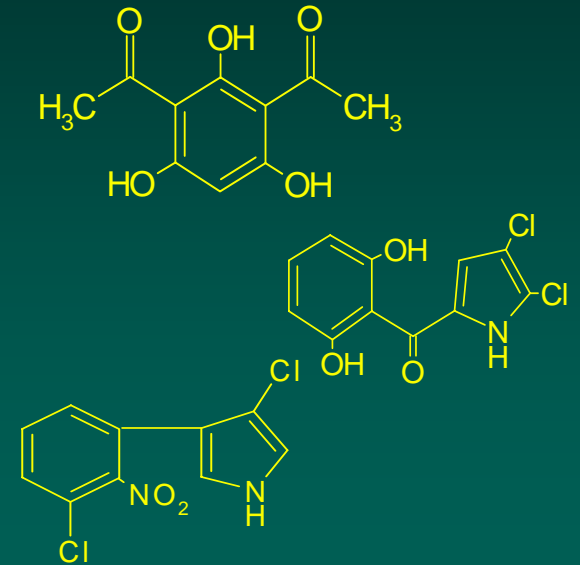
Untreated seeds

Seeds treated
with Pf-5



Pf-5 is the first biological control agent
for plant disease
whose genomic sequence is known

Anti-fungal antibiotics
produced
By Pf-5



Small Fruit Virology Program

PI: Robert Martin, HCRL, Corvallis



Virus

Control



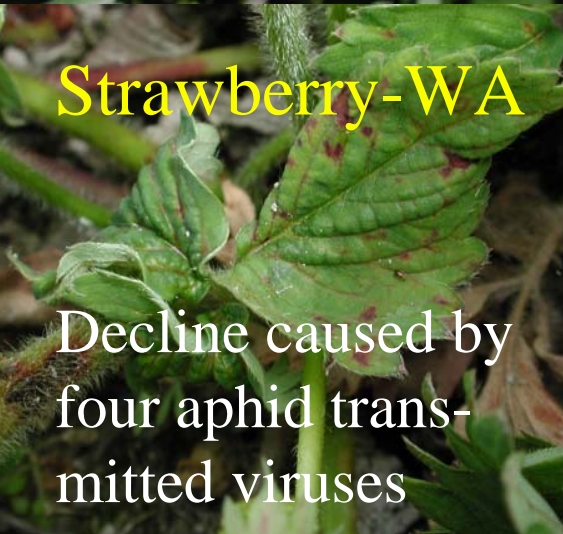
Blueberry

Fruit Drop a new
Virus Disease



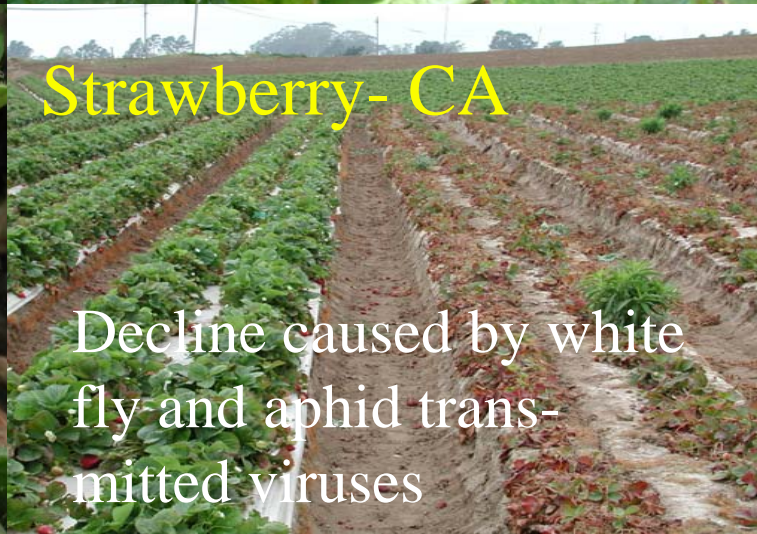
Blackberry yellows

New Crinivirus plus three
other new Rubus viruses



Strawberry-WA

Decline caused by
four aphid trans-
mitted viruses



Strawberry- CA

Decline caused by white
fly and aphid trans-
mitted viruses



Engineered Resistance
to RBDV



Vector Control and Testing